## RE: Portland Harbor - Today, Tuesday, January 15th 2:30 to 3:30 pm (pacific) BERA Comments Conference Call

John Toll to: Jennifer Woronets, Burt Shephard, Chip Humphrey, James McKenna 01/15/2013 11:23 AM

3 attachments

Dioxin fish tissue residue data 010813_Windward.xls

Fish dioxin TRV derivation_01_10_2013.xlsx

DDx fish tissue TRV derivation_1_8_13.xls

Thanks Jen. Burt, Chip and Jim, we also need to know asap whether EPA approves the dioxin and DDx fish tissue TRVs that Matt sent on Friday (please see attached). I'm hoping that we can check that off first, or better yet get e-mail confirmation before the 2:30 call (we're on a tight schedule! ☺). John

**From:** Jennifer Woronets [mailto:jworonets@anchorqea.com]
**Sent:** Tuesday, January 15, 2013 11:05 AM
**To:** 'Burt Shephard (Shephard.Burt@epa.gov)'; Humphrey.Chip@epamail.epa.gov; John Toll; James McKenna
**Cc:** Jennifer Woronets
**Subject:** RE: Portland Harbor - Today, Tuesday, January 15th 2:30 to 3:30 pm (pacific) BERA Comments Conference Call

Burt, Chip, John, Jim,

The BERA call has been scheduled for today from 2:30 to 3:30 pm (pacific).

Call in number
Non-Responsive

Thank you,
Jen Woronets ☺
Anchor QEA, LLC
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Portland, OR 97204
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**From:** Jennifer Woronets
**Sent:** Monday, January 14, 2013 3:38 PM
**To:** 'Burt Shephard (Shephard.Burt@epa.gov)'; Humphrey.Chip@epamail.epa.gov; johnt@windwardenv.com; James McKenna
**Cc:** Jennifer Woronets
**Subject:** Portland Harbor - Scheduling BERA Comments Conference Call

Burt, Chip, John, Jim,

I would like to schedule a one hour call tomorrow Tuesday, January 15th to discuss EPA's comments on the BERA.

Please provide me your availability to attend a one hour call tomorrow. *Please do not reply to all with this information.*

Thank you,
Jen Woronets ☺
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----- Message from Matt Luxon <MattL@windwardenv.com> on Fri, 11 Jan 2013 09:31:09 -0800 -----

**To:** "Shephard.Burt@epamail.epa.gov" <Shephard.Burt@epamail.epa.gov>
**cc:** Jennifer Woronets <jworonets@anchorqea.com>, John Toll <JohnT@windwardenv.com>, James McK <jim.mckenna@verdantllc.com>
**Subject:** RE: Dioxin TRV derivation

Hi Burt,
I've completed calculation of the dioxin and DDx fish tissue TRVs. I am proceeding with revision of the BERA using the revised DDx TRV as per our conversation earlier this week. Let me know if you have any comments on the Dioxin TRV. I would like to proceed with revising the BERA with the new TRVs on Monday.

The attached spreadsheets summarize the available 2,3,7,8-TCDD and DDx fish tissue residue toxicity data for whole body fish. Species sensitivity data fits from @Risk for the acceptable 2,3,7,8-TCDD and

DDx studies are also included. The TRVs are described briefly below.

**Dioxin**

Maximum dioxin/furan TEQ and total TEQ concentrations in smallmouth bass exceed the EPA specified screening value of 50 pg/g ww; therefore, derivation of a tissue TRV is needed for the BERA.

The original literature for the studies in the database that EPA provided us earlier this week were all reviewed if we hadn't reviewed them earlier. The acceptability of those studies for TRV derivation is noted in the attached revised version of EPA's table (Dioxin fish tissue residue data 010813 to Burt.xlsx).

Acceptable studies from EPA's database were added to our working spreadsheet for dioxin TRV derivation, also attached (Fish dioxin TRV derivation_01_10_2013.xlsx). Acceptable LOERs are available for more than five species, so the species sensitivity distribution approach was used for derivation of the TRV.

The only species for which multiple LOERs are available is rainbow trout. The geomean of rainbow trout growth studies results in the lowest rainbow trout final species LOER.

Based on the fit statistics provided by @Risk, a Weibul distribution best fits the data. The 10th percentile of the distribution is 134 pg/g ww. This is recommended as the 10th percentile TRV for the BERA. A 5th percentile TRV is not needed because no special status fish screened in for 2,3,7,8-TCDD nor any dioxin TEQ.

**DDx**

My starting point for derivation of the DDx TRV was the TRV reconciliation tables sent from the LWG to EPA on November 20, 2008. EPA's responses to this table were sent from Eric Blischke on December 22, 2008. Regarding DDx, EPA's response states:

*EPA agrees with all of the suggested LOER modifications on the basis of ACR application because all study durations were greater than 30d. However, it should be noted that previous agreements do not allow for excluding ACRs if mortality levels are < 50%, so this language should be removed from this and all other tables. EPA agrees with all of the suggested exclusions except those related to the general comments above, and except for the exclusion of Berlin et al. (1981) lake trout study. Similar to the Broyles and Noveck (1979) PCB study discussed below, even though fish and eggs were obtained from a hatchery or were field collected in Lake Michigan, the study itself consisted of a valid experimental exposure of DDX to fry. Therefore, the LOER from Berlin et al. (1981) should be retained.*

The general comments referred to are:

*1. EPA does not agree to exclude studies that measured tissue residues in sac-fry or larval stages of fish. The tissue TRV derivation methods state that only egg tissue residue-based studies should be excluded, and so LOERS based on tissue measurements in any fish life stage posthatch (including sac fry) should be included for TRV derivation. Even though sac-fry will not bioaccumulate contaminants via dietary pathways, they clearly are capable of bioconcentrating contaminants from ambient water. Therefore, residue effects studies using sac-fry (or older life stages) should not be excluded from TRV development, so long as organisms are exposed via water or diet after hatching (i.e., the sac-fry are not exposed purely owing to maternal transfer or egg-only exposure).*

*2. EPA does not agree with many of the study exclusions on the basis of behaviors not being linked to survival, growth, or reproduction. For fish, EPA and its partners contend that the*

*literature supports inclusion of studies using the following behaviors as being sufficiently linked to the assessment endpoints for fish receptors: locomotion (including swimming speed), predator avoidance, hypo or hyper activity, changes in temperature preference, and feeding. Attachment 1 to this document includes documentation of the relationship between predator-prey relationships, avoidance, feeding behavior and swimming and effects on survival, growth and reproduction.*

*3. EPA agrees to exclude studies in which positive growth (i.e., hormesis) was the basis for selection of the LOER. While hormetic responses are an inherent component of dose-response models for many chemicals, organisms, and endpoints (Calabrese 2008), EPA is unaware of any literature that demonstrates whether a positive growth response in laboratory fish can be linked to an "adverse" effect at the population level. Further, as stated in Van der Shalie and Gentile (2000), "It is impractical to apply hormetic effects to ecological risk-based benchmarks or criteria derived from distributions of species sensitivity data." Consequently, EPA agrees that hormesis is not an appropriate response for use in developing TRVs for the BERA at Portland Harbor.*

Two additional changes were made based on a memo from EPA on January 23, 2009:
In this memo EPA directed the LWG to include Berlin et al. (1981). Additionally, EPA directed the LWG to include behavior studies linked to survival, growth, and reproduction. Only one behavior study pertinent to DDx was identified for inclusion (Gakstatter and Weiss 1967).
Finally, consistent with the comments on the draft final BERA, I changed the LOER value from Allison et al. 1964 from 3 to 1.1 mg/kg ww.
The resulting table of studies (attached table DDx fish tissue TRV derivation_1_8_13.xlsx) is identical to the DDx fish tissue TRV table presented in Draft Final BERA Attachment 9 previously submitted to EPA, except that the value for Allison et al. 1964 is 1.1 instead of 3 mg/kg ww.
Based on the fit statistics provided by @Risk, a Weibul distribution best fits the data (see attached table). The 5th and 10th percentiles of the distribution are 0.56 and 1.3 mg/kg ww, respectively. As indicated by Burt in our discussion earlier this week, these will be used as the 5th and 10th percentile TRVs for the BERA.

Thanks,
Matt

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